

WE CLAIM:

1. A method of treating a flexible multi-layer member exhibiting a glass transition temperature and including a surface layer, the method comprising:

moving the member through a member path comprising: a contact zone defined by contact of the member with an arcuate surface including a curved contact zone region; a pre-contact member path before the contact zone; and a post-contact member path after the contact zone;

heating sequentially each portion of the surface layer such that each of the heated surface layer portions has a temperature above the glass transition temperature while in the curved contact zone region; and

cooling sequentially each of the heated surface layer portions while in the contact zone such that the temperature of each of the heated surface layer portions falls to below the glass transition temperature prior to each of the heated surface layer portions exiting the curved contact zone region, thereby defining a cooling region, wherein the heating is accomplished in a heating region encompassing any part or all of the contact zone outside the cooling region and a portion of the pre-contact member path adjacent the contact zone.

2. The method of claim 1, wherein the heating raises each of the heated surface layer portions to a temperature ranging from about 5 to about 40 degrees C above the glass transition temperature.

3. The method of claim 1, wherein the cooling lowers each of the heated surface layer portions to a temperature at least about 20 degrees lower than the glass transition temperature.

4. The method of claim 1, wherein the cooling lowers each of the heated surface layer portions to a temperature at least about 40 degrees lower than the glass transition temperature.

5. The method of claim 1, wherein the member is a web or a belt.

1 6. The method of claim 1, wherein the cooling comprises transferring heat
2 away from the member via heat conduction through the arcuate surface and via heat
3 convection to ambient air.

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5 7. The method of claim 6, wherein the cooling further comprises transferring
6 heat away from the member via heat conduction or heat convection to a coolant.

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8 8. The method of claim 6, wherein the cooling is accomplished without
9 transferring heat away from the member via heat conduction or heat convection to a
10 coolant.

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12 9. The method of claim 1, wherein the arcuate surface is non-rotatable.

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14 10. The method of claim 1, wherein the arcuate surface rotates.

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16 11. The method of claim 1, wherein the contact zone further includes two
17 straight contact zone regions and therebetween the curved contact zone region.

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19 12. The method of claim 1, wherein the member contacts the arcuate surface at
20 a wrap angle ranging from about 30 to about 350 degrees.

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22 13. The method of claim 1, wherein the member contacts the arcuate surface at
23 a wrap angle of about 180 degrees.

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25 14. The method of claim 1, wherein the surface layer exhibits the glass
26 transition temperature.

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28 15. The method of claim 1, wherein the member includes a layer adjacent to
29 the surface layer that exhibits the glass transition temperature and the surface layer
30 exhibits a different glass transition temperature.

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32 16. The method of claim 1, wherein the member is moved at a constant speed
33 through the contact zone.

1 17. The method of claim 1, wherein the member is moved at a non-constant
2 speed through the contact zone.

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4 18. The method of claim 1, wherein the member further includes an additional
5 layer,

6 wherein due to heat conduction within the member, the heating sequentially of
7 each portion of the surface layer also causes heating sequentially of each portion of the
8 additional layer such that each of the heated additional layer portions has a temperature
9 above the glass transition temperature while in the curved contact zone region,

10 wherein due to heat conduction within the member, the cooling sequentially of
11 each of the heated surface layer portions also causes cooling sequentially of each
12 portion of the additional layer such that the temperature of each of the heated
13 additional layer portions falls to below the glass transition temperature prior to each of
14 the heated additional layer portions exiting the curved contact zone region.

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16 19. A method of treating a flexible imaging member comprised of in the
17 following sequence a substrate layer, a charge generating layer, and a charge transport
18 layer wherein the charge transport layer exhibits a glass transition temperature, the
19 method comprising:

20 moving the member through a member path comprising: a contact zone defined
21 by contact of the member with an arcuate surface including a curved contact zone
22 region; a pre-contact member path before the contact zone; and a post-contact member
23 path after the contact zone;

24 heating sequentially each portion of the charge transport layer such that each of
25 the heated charge transport layer portions has a temperature above the glass transition
26 temperature while in the curved contact zone region; and

27 cooling sequentially each of the heated charge transport layer portions while in
28 the contact zone such that the temperature of each of the heated charge transport layer
29 portions falls to below the glass transition temperature prior to each of the heated
30 charge transport layer portions exiting the curved contact zone region, thereby defining
31 a cooling region, wherein the heating is accomplished in a heating region encompassing
32 any part or all of the contact zone outside the cooling region and a portion of the pre-
33 contact member path adjacent the contact zone.

1 20. The method of claim 19, wherein the member is moved at a constant speed
2 through the contact zone.
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